

AMENDMENTS TO THE CLAIMS

Please amend claim 12, 13, 19, 21 and 25, cancel claims 15 and 31-36 and add new claims 37-40. A complete listing of the claims, including their current status, is provided below.

1-11. (Cancelled)

12. (Currently amended) A method for producing an insulin-producing cell *in vitro*, the method comprising:

introducing a nucleic acid molecule operably linked to a promoter into a precursor cell *in vitro*, the nucleic acid molecule encoding a ~~neuroendocrine~~ neuroendocrine class B basic helix-loop-helix (bHLH) transcription factor, said introducing being in an amount sufficient for production of the neuroendocrine bHLH islet transcription factor and production of an insulin-producing cell;

wherein said precursor cell is an embryonic stem cell or a cultured gastrointestinal organ cell.

13. (Currently amended) The method of claim 12, wherein the neuroendocrine bHLH islet transcription factor is neurogenin3.

14. (Withdrawn) The method of claim 12, wherein the islet neuroendocrine bHLH transcription factor is a positive regulator of a neurogenin3 (Ngn3) regulatory pathway.

15. (Cancelled)

16. (Withdrawn) The method of claim 12, wherein the islet neuroendocrine bHLH transcription factor is ~~a neuroendocrine bHLH transcription factor selected from the group consisting of~~ a neurogenin1, neurogenin2, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, ~~and~~ or mash2.

17. (Cancelled)

18. **(Previously presented)** The method of claim 12, wherein the insulin-producing cell produced is an insulin-producing islet cell.

19. **(Currently amended)** A method for producing a mammalian insulin-producing cell *in vitro*, the method comprising the steps of:

introducing into a mammalian cell *in vitro* a nucleic acid molecule operably linked to a promoter, the nucleic acid molecule encoding a ~~neuroendocrine~~ **neuroendocrine** class B bHLH transcription factor, said introducing providing for expression of the transcription factor in the mammalian cell and production of insulin in the mammalian cell;

wherein said mammalian cell is an embryonic stem cell or a cultured gastrointestinal organ cell.

20. **(Original)** The method of claim 19, wherein the mammalian cell is a pancreatic cell.

21. **(Currently amended)** The method of claim 19, wherein the neuroendocrine bHLH islet transcription factor is neurogenin3.

22. **(Withdrawn)** The method of claim 19, wherein the islet neuroendocrine bHLH transcription factor is a positive regulator of a neurogenin3 (Ngn3) regulatory pathway.

23. **(Withdrawn)** The method of claim 19, wherein the islet neuroendocrine bHLH transcription factor is a ~~neuroendocrine bHLH transcription factor selected from the group consisting of~~ a neurogenin1, neurogenin2, NeuroD1/BETA2, neuroD2, math2, NeuroD4/Math3, math1/ATOH1, mash1/ASCL1/ASH1, ~~and or~~ or mash2.

24. **(Cancelled)**

25. **(Currently amended)** A method for producing a mammalian insulin-producing cell *in vitro*, the method comprising the steps of:

introducing into a mammalian pancreatic cell *in vitro* a nucleic acid molecule operably linked to

~~a promoter, a nucleic acid~~ **the nucleic acid** molecule **being operably linked to a promoter, said nucleic acid molecule** encoding neurogenin3 (Ngn3), said introducing providing for expression of Ngn3 in the cell and production of insulin in the cell.

26. **(cancelled)**

27. **(Previously presented)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing cell produced by the method of claim 25 into a mammalian subject, said introducing providing for production of insulin by the insulin-producing cell and delivery of insulin to the bloodstream of the mammalian subject.

28. **(Previously presented)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing cell produced by the method of claim 12 into a mammalian subject, said introducing providing for production of insulin by the insulin-producing cell and delivery of insulin to the bloodstream of the mammalian subject.

29. **(Previously presented)** A method for delivering insulin to the bloodstream of a mammalian subject, the method comprising:

introducing an insulin-producing cell produced by the method of claim 19 into a pancreas of a mammalian subject, said introducing providing for production of insulin by the insulin-producing cell and delivery of insulin to the bloodstream of the mammalian subject.

30. **(Previously presented)** The method of claim 12, where the precursor cell is an adult pancreatic cell.

31-36. **(Cancelled).**

37. **(New)** The method of claim 12, wherein said gastrointestinal organ is pancreas.

38. **(New)** The method of claim 19, wherein said gastrointestinal organ is pancreas.
39. **(New)** The method of claim 12, wherein said gastrointestinal organ is liver.
40. **(New)** The method of claim 19, wherein said gastrointestinal organ is liver.